REMARKS

Claims 2, 5, 20, and 23 were cancelled without prejudice or disclaimer. Claims 1, 3, 4, 6 – 19, 21, 22, and 24 remain pending in the present application. Claims 4, 6, 8, 10, and 14 – 18 were withdrawn from consideration. Claims 9, 21, 22 and 24 were allowed. The rejections set forth in the Office Action are respectfully traversed below.

Claim Objection

The objection to claim 23 was noted. Claim 23 was canceled by this Amendment.

The Prior Art Rejections

Claims 1, 3, 7, 11, 13 and 19 remain rejected under 35 USC §103 over the Applicants' admitted prior art (AAPA), in view of **Nagahama** et al. (USP Re 35,332).

Again, the Examiner emphasized that the arrangement of the divisions of the diffraction grating is "not critical" according to **Nagahama**. The Office Action clarified this point by noting that **Nagahama** discloses several alternative shapes for the division of the diffraction device 13 (see e.g. column 8, lines 38 to 57; and Figures 7A to 7D). The Office Action further emphasized that division of the diffraction element into six areas, as claimed, is well-known in the art, by citing the further reference to **Toda et al**. (USP 5,644,565) Figures 1c and 6b, as well as the further reference to **Sakai** (USP 6,137,752) Figure 6, unit 3.

The Office Action further emphasized that the use of the Foucault method according to **Nagahama** and the use of the astigmatism method of the present invention are interchangeable. According to the Office Action, the Foucault method inherently incorporates astigmatism within

itself and produces the same result more accurately. However, this is incorrect, and reflects a fundamental misunderstanding of the art.

To clarify the Examiner's understanding, the concurrently filed Information Disclosure Statement encloses an article by Bruce E. Bernacki and M. Mansuripur, "Causes of focus-error feedthrough in optical-disk systems: astigmatic and obscuration methods," APPLIED OPTICS, Vol. 33, No. 5, pp.735-743 (1994). This article provides a comprehensive evaluation with respect to various focus-error detection methods to aid in the Examiner's understanding of the art.

This document describes a comparison and an evaluation of various focus-error detection methods from the viewpoint of "feedthrough" and clearly makes a distinction between "astigmatic method" and "obscuration (Foucault knife-edge) method." The Foucault method features that the focus of converged light is positioned on a photodetector in focusing on a disk (Fig. 8). On the other hand, the astigmatic method features that the middle point between two foci of converged light which are apart from and orthogonal to each other is positioned on the photodetector in focusing on the disk (Fig. 2). Therefore, both methods have clearly distinctive optical characteristics which are neither alternative nor inclusive to each other such that one can be replaced with the other or that one can include the other. It is neither possible that either method is outstandingly superior to the other. Both methods have some advantages and disadvantages on each respect as described in the second last paragraph of Conclusion of the above document. This is a common recognition to those skilled in the art. Furthermore, different concepts are needed for novel inventions that aim to increase the advantages and decrease the disadvantages in each method.

In this context, the present claimed invention is directed to, for the first time, a completely new technique that can use any of the differential push-pull method, the push-pull method, the three beam method and the DPD method as the tracking error detection method in an optical head using a small, lightweight, inexpensive holographic optical element based on the astigmatic method (thus retaining the advantages of the astigmatic method), and that can also cope with wavelength variation of a light source.

To enable this feature, the present invention is based on a completely new idea which has not conventionally existed – i.e. that among spots on a photodetector for a light beam with astigmatism, those spots, which also move while being deformed at the time the optical desk is shifted from the focal point, are separated from other spots which are only deformed without moving. It is thus important how the holographic optical element that provides a diffracted beam with astigmatism be specifically divided. This specific division of the optical element and the movement of the first and second condensed spots are clarified in amended independent claims 1 and 9.

In contrast, **Sakai** is based on "the differential spot size method" as described in the second last paragraph of Conclusion of the above document and also has both advantages and disadvantages. The optical characteristic of this method is a technique using two types of beams with different focal lengths, which distinguishes from the above Foucault method or the astigmatic method. **Toda** is directed to the division of diffraction elements on a recording medium in order to achieve fast and high density recording and reproducing, which provides a totally different function.

Nothing in the cited prior art, either alone or in combination, teaches or suggests the present claimed specific division of the optical element that provides a diffracted beam with astigmatism, as well as the movement of the first and second condensed spots among the different photodetection parts depending on the focus state. For at least these reasons, the present claimed invention patentably distinguishes over the prior art.

If, for any reason, it is felt that this application is not now in condition for allowance, or if the Examiner wishes additional explanations of the present invention, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that any fees are due in connection with the filing of this paper, please charge any fees to Deposit Account No. 50-2866.

Respectfully submitted,

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